$\dim(\mathbb{K}_n[X]) = n+1$

$\dim(\mathbb{K}^n) = n$

$f \in \mathcal{L}(E) \Leftrightarrow$ { 1) $f : E \to E$ applic
2) f applic linéaire

---

f applic linéaire de E vers $F \Leftrightarrow$ (D)

$\left(\forall x,y \in E,\ \forall \lambda \in \mathbb{K},\ f(\lambda x + y) \overset{?}{=} \lambda f(x) + f(y)\right)$

La base canon de $\mathbb{K}_n[X]$ est $(1, X, X^2, \dots, X^n)$ (X^0)

---

f automorph de $E \Leftrightarrow f \in GL(E)$

$\Leftrightarrow$ { 1) $f \in \mathcal{L}(E)$
2) f bijectif

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$B = (e_1, \dots, e_n)$

$x \in E$; $f \in \mathcal{L}(E)$; B base de E.

1) $x = 0 \iff \underset{B}{mat}(x) = \begin{pmatrix} 0 \\ \vdots \\ 0 \end{pmatrix}$

2) $\underset{B}{mat}(x) = \begin{pmatrix} x_1 \\ \vdots \\ x_n \end{pmatrix} \iff x = x_1 e_1 + \dots + x_n e_n$

3) $f(x) = 0 \iff \underset{B}{mat}(f(x)) = \begin{pmatrix} 0 \\ \vdots \\ 0 \end{pmatrix}$

$\iff$ (S!) $\underset{B}{mat}(f) \cdot \underset{B}{mat}(x) = \begin{pmatrix} 0 \\ \vdots \\ 0 \end{pmatrix}$

(S!4) $\underset{B}{mat}(f(x)) = \underset{B}{mat}(f) \cdot \underset{B}{mat}(x)$

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